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Bulletins 246 to 251

Circular 31

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Kentucky Agricultural Experiment Station

University of Kentucky

The Marketing of Kentucky Strawberries

BULLETIN NO. 246



Lexington, Ky.

January, 1923.

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BULLETIN NO. 246

The Marketing of Kentucky Strawberries

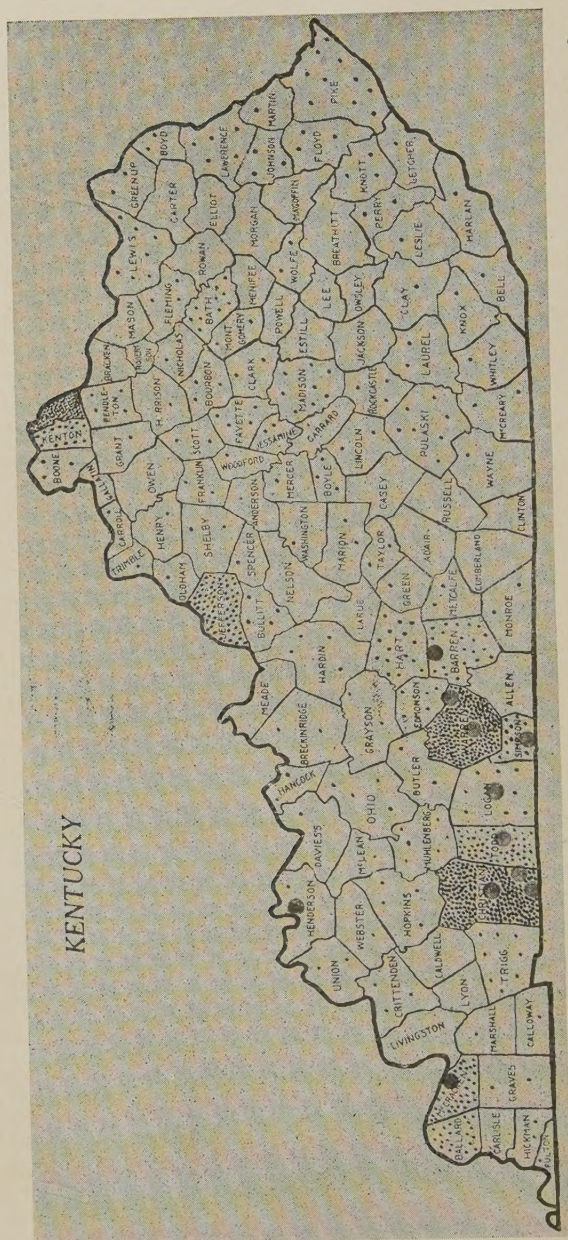
By O. B. JESNESS and D. G. CARD

The growing of strawberries on a commercial scale is a comparatively recent development in Kentucky. Since its start fourteen or fifteen years ago, however, it has had a rapid growth. According to the United States Census there were 3,112 acres of strawberries in Kentucky in 1919, while ten years before there were 1,553 acres. While the acreage of strawberries in Kentucky in 1919 was 100% larger than the 1909 acreage, the 1919 acreage for the entire United States was about 16% less than the 1909 acreage. The accompanying map (Fig. 1) indicates where the industry has been developed in Kentucky.

MARKETING ORGANIZATIONS

The strawberry growers in Kentucky have established cooperative marketing associations for the sale of their berries wherever strawberry growing has been developed on a commercial scale for the shipment of berries to distant markets. The industry at first centered around Bowling Green, and the first organization formed was the Warren County Strawberry Growers' Association, which has been in operation since 1908. As other localities have taken up strawberry growing they have established similar associations.

There were eleven cooperative marketing associations in Western Kentucky engaged in the marketing of strawberries in



1922. The dates of organization of these associations as reported by them suggest the growth of the industry.

Number	Year of Organization
1.....	1908
1.....	1913
1.....	1916
2.....	1919
2.....	1920
3.....	1921
1.....	1922

This shows that most of these associations have been established during the last three or four years.

According to the information furnished by the associations, they had a membership of 2,056 growers in 1922. The number of members at the time of organizing was obtained in order to note the growth. The total membership of all associations at the time of organization was 621, showing a gain of over 200 per cent. Two of the organizations which began with about a dozen members had memberships of 750 and 375 in 1922. Of two organizations which were formed in 1919, one had increased its membership from 45 to 80 and the other from an initial membership of 20 to one of 125 in 1922. The gain in membership in the more recently organized associations naturally is smaller than in the older organizations.

The acreage of strawberries grown by the members at the time of organizing and in 1922 was obtained from nine of the associations. The total of the reports for these nine associations showed that the acreage had increased from 767 acres to 3,770 acres. One association which began with less than 50 acres of berries had about 1,350 acres in 1922. Of two associations which started out several years ago with about 50 acres, one reported that its members had 750 acres and the other reported 500 acres in 1922.

The plans of organization which have been adopted by the various associations are very similar. Several of them have adopted practically the same plan as that which was worked out by the association in Warren County. Most of the associations are incorporated under State law. Some have been formed

with capital stock and some are nonstock organizations. The organizations which have capital stock, adopted this form mainly because they desired to incorporate under a law which provided only for capital stock organizations. The amount of capital stock is not very large in any case. The nonstock plan is well suited to the needs of strawberry marketing associations and, since the Bingham Cooperative Marketing law, which was enacted in January, 1922, provides for the incorporation of cooperative associations formed either with or without capital stock, it is likely that at least some of the associations will organize and incorporate under that law. One strawberry association has already incorporated under the Bingham law and others have this step under consideration.

These associations observe the cooperative plan of voting, each member being limited to one vote. They are managed by a board of directors selected by the members from among their own number, and employ a business manager, who has charge of the business and selling operations under the supervision of the board of directors.

It is customary for the members to market all the berries which they have for sale thru their association, except, in some cases, berries for local consumption may be sold by the growers. The members are required to sign specific marketing contracts only in the case of a few of the associations. The others have sections in their by-laws which stipulate that the members must market their berries thru the association. It should be noted that the situation with respect to these organizations differs to some extent from that found in the case of many cooperative marketing organizations due to the fact that the strawberry marketing associations have developed with the industry and have not been organized to supplant or compete with existing marketing agencies. The growers consequently regard the organization as the logical outlet for their strawberries and no tendency to sell the berries outside the organization has been in evidence. At one or two points, it is true, there has been some lack of understanding among the members, with the result that two or more

organizations have been formed where one could handle the business.

The manager of the association is in direct charge of the marketing of the berries. He usually spends some time in advance of the opening of the shipping season in getting in touch with buyers. The keeping of the necessary records is in his hands, and he must devote some time after the close of the shipping season to the winding up of the season's business. He also attends to the purchase of supplies handled thru the association so that his services are required for a considerably longer period than the actual shipping season. In the case of one or two of the associations, the business office has been kept open thruout the year.

The berries are pooled either by cars or by days. By pooling is meant the averaging of returns, usually by grade, so that each member is paid at the same rate for each grade. The associations which employ the carlot pools average the returns of each car, while those that employ the daily pools average all the sales each day. Final settlement is not made with the growers until the shipping season is over. Some associations make advances during the shipping season to the growers who desire such advances. The expenses of operating the association are prorated and are deducted from the returns before final payment is made to the growers.

The associations in addition to marketing berries for the members usually purchase for them such supplies as plants, boxes, crates and fertilizers needed in the production and handling of their berries. They also assist in securing a supply of pickers for their members.

MARKETING METHODS

The picking and packing of the berries bear a close relation to their sale, because the way in which these operations are performed has considerable to do with the results obtained. Picking requires much hand labor and this is often difficult to obtain, especially in the more important producing sections, as in these

localities the local supply of help is not sufficient to take care of the needs of the growers and workers must be brought in from other places.

It is customary to pay the pickers on the basis of the amount of berries which they pick instead of on a time basis. The rate used at most points during the 1922 season was ten cents a gallon with a bonus of three cents a gallon for the workers who were available thruout the season. The purpose of the bonus is to encourage the pickers to stay so that a supply of help will be available. Various systems of keeping records of the amounts picked are in use. Some growers have numbered cards which are punched as the picker delivers berries; others give out printed tickets indicating the amount. Payment customarily is made once or twice a week. Some difficulty is encountered in the system of checking as pickers may discover ways of punching their cards themselves or the tickets of different growers may become mixt due to a shifting about of the pickers. From four to ten pickers per acre are employed. The larger growers also employ field bosses, each one of whom supervises the work of a certain number of pickers or a certain part of the field.

The grading of the berries is done in the fields to some extent, but for the most part is taken care of at the packing sheds. In grading, the berries may be poured from one box into another or are poured into grading pans designed especially for that purpose. These pans permit the grader to see the berries and he can sort out undesirable berries before pouring them back into the box. The berries in some cases are "plate" packed, that is, the berries in the top layer are arranged on their sides, all pointed one way in order that the boxes may present a more attractive appearance. The facing of the boxes in this manner, however, requires extra labor, which means increased cost, consequently the ordinary loose pack is usually employed. When the boxes are faced it is important that the berries in the top layer fairly represent the rest of the contents and not be larger and more attractive.

The grades employed by most of the associations are designated as 3X, 2X and X, the 3X grade being the best and the X grade representing the culls, which usually are not shipt. Some of the associations designate their grades by the numbers 1, 2 and 3, number 1 being the best grade.

The associations make inspections of berries before shipment. In some cases, some crates of each crop are inspected, while other associations report that each crate is inspected. Crates that are inspected are opened and several boxes examined to note the quality of the berries and the way in which they are packed. The quality and uniformity of strawberries are important factors in selling them, because good quality creates demand while inferior berries discourage consumption. Careful inspection is necessary in order that a reputation for quality can be built up and maintained.

The berries are delivered at the loading point by the growers in farm wagons with springs or in automobiles. They are inspected by the association's inspectors and loaded on the cars. At some points they are loaded directly from the growers' wagons on the cars. In other cases they are piled from the wagons on to a platform and loaded from that into cars. Receiving sheds or warehouses are available at a few points for the receiving and loading of berries.

A receipt is given the grower upon delivery of his berries and a copy of this is kept by the association for its records. In some cases, these receipts are made in triplicate, the association filing one under the grower's name and the other under the number of the car in which the berries are shipt. The accounting forms used by the various associations vary, but, in general, they provide for an account with each member. All transactions between the member and the association, such as the sale of berries, the purchase of supplies, advances made, etc., are itemized in this account. Some associations keep this account in duplicate so that a copy may be given the grower as his statement at the end of the season. Other associations prepare a separate statement for the grower. A record which shows the



Fig. 2.—The size of the dots indicates the relative importance of various states and Canada, as markets for Kentucky berries in 1922. (Based on 650 cars for which the destinations were ascertained by the U. S. Department of Agriculture.)

number of crates, the grade of berries and the names of the growers delivering them, also is kept for each car shipment. This record is essential when carlot pools are employed.

Nearly all the berries are shipped to markets in the states to the North and East either by freight or express. Express shipments are mostly from points on one railroad line which furnishes service of this kind. The shipments, of course, must be made under refrigeration.

The sales are made f. o. b. shipping point when possible so that the associations are relieved of the marketing of the berries after they are loaded on board cars. Shipments are consigned to dealers in distant markets to be sold for the association on a commission basis when satisfactory f. o. b. sales cannot be made. Some of the f. o. b. sales are made to buyers who have personal representatives at the shipping points, while others are made by wire to distant buyers.

Information regarding market conditions is obtained by wire. During most of the 1922 shipping season, a representative of the U. S. Department of Agriculture was stationed at Bowling Green to obtain shipping point information and to distribute information sent him from representatives of the department in the principal markets. Part of the expense involved in rendering this service was paid by several of the associations, which earlier in the season established an informal central association for the interchange of information.

The U. S. Department of Agriculture, thru its Food Products Inspection Service, has inspectors stationed in a number of the leading markets. These inspectors make inspections of shipments of fruits and vegetables when called upon to do so by an interested party. A fee is charged for this service and a certificate showing the results of the inspection is furnished. This service is of value in settling disputes between the buyer and the seller. Government inspection is not used directly to any great extent by the strawberry marketing associations in Kentucky. One reason for this is that many of the shipments are sold at the shipping point.

The outlets for Kentucky strawberries are found mainly in Michigan, Ohio, Pennsylvania, Indiana and Illinois. The U. S. Department of Agriculture, in connection with its market news service on strawberries, obtained information regarding the primary destinations of both freight and express shipments of berries from Kentucky during the principal shipping season. These reports did not include all the shipments, as some were made both before and after the main marketing season covered by these reports. The distribution of destinations by states of the cars for which this information was obtained was as follows:

State	By Freight	By Express	Total Cars
Michigan	133	.....	133
Ohio	122	9	131
Pennsylvania	110	3	113
Illinois	68	5	73
Indiana	58	.....	58
Massachusetts .....	.....	32	32
New York	15	11	26
Rhode Island .....	.....	18	18
Wisconsin	11	1	12
Kentucky	12	.....	12
Minnesota	2	8	10
West Virginia	8	.....	8
Missouri	7	.....	7
Canada .....	.....	6	6
Maine .....	.....	5	5
Maryland	3	.....	3
Iowa	1	.....	1
Nebraska .....	.....	1	1
Georgia	1	.....	1
Unknown	99	7	106
Total	650	106	756

The markets which were reported to have received ten or more cars of Kentucky berries in 1922 are as follows:

City	Cars
Detroit	118
Pittsburgh	101
Chicago	52
Cleveland	24
Boston	24
Fort Wayne	19
Providence	18
Columbus	17
Youngstown	13
Canton	10
Milwaukee	10

In addition to the above there was a large number of other cities which received from one to nine cars of berries. Altogether, 77 cities were listed as having received cars by freight and 20 cities by express. Ten of the cities received both freight and express shipments, making a total of 87 cities which received Kentucky berries in carload lots. As the destinations of over 100 of the cars were unknown, the actual number of markets no doubt is larger and some of the markets listed received more than the number of cars indicated.

Kentucky berries compete with berries from several other sections which ship about the same time. The principal competing regions are located in Tennessee, Missouri and Arkansas. The following table prepared by the U. S. Department of Agriculture indicates the daily carlot shipments of strawberries from these different states and the United States as a whole, during the period May 10 to 31, 1922, with comparisons for the corresponding periods in 1921. As will be noted, the 1922 season was considerably earlier than that of 1921.

WEEKLY SHIPMENTS BY STATES AND U. S. TOTALS COMPARED WITH LAST SEASON

Week	Kentucky 1922-'21		Tennessee 1922-'21		Arkansas 1922-'21		Missouri 1922-'21		Total U. S. 1922-'21	
Apr. 16-22					10	72			678	464
Apr. 23-29			66	179	72	234			809	809
Apr. 30 May 6			767	307	389	240			1949	844
May 7-13	35	0	1622	505	707	242	1		3445	1270
May 14-20	308	110	804	356	613	92	120	13	3068	1344
May 21-27	310	231	457	301	304	168	867	354	3072	2053
May 28 June 3	101	46	78	43	81	28	722	126	2131	1114

These states to some extent depend upon markets in the same territory as Kentucky, altho considerable amounts of ber-

ries from the shipping regions in these states move to markets farther west. Kentucky has some advantage in the markets to the north and east in that she is nearer to those markets than are the other states.

The following table shows the destinations by states of 1,372 cars of Southwestern Missouri berries, 801 cars from Northwestern Arkansas and 1,255 cars from the White County, Arkansas, district during 1922. (Data from U. S. Department of Agriculture, Market News Reports.):

Southwestern Missouri		Northwestern Arkansas		White County, Ark., District	
States	Cars	States	Cars	States	Cars
Missouri	344	Missouri	266	Missouri	492
Nebraska	100	Minnesota	112	Minnesota	189
Iowa	114	Iowa	67	Illinois	144
Minnesota	145	Kansas	62	Iowa	101
Illinois	82	Nebraska	59	Michigan	47
Colorado	74	Illinois	50	Pennsylvania	41
New York	72	Wisconsin	48	Texas	31
Ohio	58	Michigan	28	Kansas	28
Canada	51	Oklahoma	22	Colorado	25
South Dakota	51	Texas	18	Ohio	22
Kansas	43	Colorado	17	Nebraska	22
Wisconsin	41	South Dakota	13	Wisconsin	21
Oklahoma	37	Montana	9	New York	20
Massachusetts	37	Indiana	6	Massachusetts	18
Michigan	31	Canada	5	Indiana	15
Pennsylvania	25	Ohio	5	Oklahoma	12
Texas	19	New York	4	New Jersey	8
Montana	16	Massachusetts	3	Montana	4
Rhode Island	9	Pennsylvania	3	Louisiana	3
Indiana	6	North Dakota	2	Tennessee	3
North Dakota	6	Washington	1	North Dakota	2
New Jersey	4	Louisiana	1	South Dakota	2
Connecticut	2		—	Wyoming	2
Utah	1	Total	801	Canada	2
Vermont	1			Kentucky	1
Louisiana	1				
West Virginia	1			Total	1255
Wyoming	1				
Total	1372				

This table shows that considerable quantities of strawberries from these sections moved into the states where are found the principal outlets for Kentucky berries. Unfortunately, the destinations of Tennessee shipments were not ascertained. The shipments from Tennessee naturally would be more likely to go mainly into the same states as the Kentucky shipments than those from the states to the west. Altho the heaviest movement from Tennessee is about over when Kentucky berries begin to move, still large quantities of Tennessee berries go to market during the height of the Kentucky season.

PRICES IN 1922

The prices received for strawberries vary during the shipping season in response to fluctuating market conditions, volume of shipment from Kentucky and competing regions and the market demand. Weather conditions also affect prices because of their effect on the quality of the berries. The prices are highest in the early part of the season and work lower as the season advances and the volume of shipments increases. The average prices received by the different associations vary considerably, due to differences in local conditions and selling methods. The average prices received by the associations in 1922, according to their reports, ranged from an average of \$3.25 per crate for the association which reported the highest average to \$2.15 per crate for the one reporting the lowest.

The following tables, which were included in the final report of the news station of the U. S. Department of Agriculture for the 1922 season in Western Kentucky, summarize the situation with regard to market conditions and prices for Kentucky berries. The first table gives the f. o. b. prices at the country shipping points and the second indicates the prices at which berries were sold to the jobbers in several of the important markets.

F. O. B. PRICES OF STRAWBERRIES*

Date	Hauling	Demand	Market	Quality	Carloads F. O. B. Usual Terms
May 12	Light	Good	Unsettled	Good	\$4.50 24-qt. crates
May 13	Moderate	Improving	Weaker	Generally good	\$3.00—\$3.50—few \$3.75
May 15	Moderate	Good	Weaker	Generally good	3.00—3.25
May 16	Moderate	Good	Steady	Generally good	3.00—3.25
May 17	Moderate	Good	Firm	Mostly good	3.00—3.25
May 18	Light	Active	Firm	Generally good	3.00—3.25
May 19	Mod. but Inc.	Good	Firm	Generally good	Mostly \$3.25
May 20	Increasing	Good	Weaker	Mostly good	Mostly \$3.00—\$3.25
May 22	Heavy	Moderate	Weaker	Generally good	\$2.75—\$3.00—few \$3.25
May 23	Heavy	Good	Steady	Generally good	Mostly \$3.00—few \$2.75
May 24	Heavy	Good	Steady	Generally good	\$3.00
May 25	Heavy but Decr.	Good	Steady	Generally good	\$2.75—\$3.00
May 26	Heavy but Decr.	Moderate	Sli. weaker	Considerable soft	Mostly \$3.00—few \$2.75
May 27	Heavy	Good	Steady	.....	Mostly \$3.00—few \$2.75

*This table includes only f. o. b. prices. Berries usually are consigned when satisfactory f. o. b. sales can not be made and under these circumstances it is to be expected that the prices received for consigned berries would average less than those sold f. o. b.

**JOBGING PRICES OF 24-QUART VENTILATED CRATES
KENTUCKY AROMAS IN FOUR IMPOR-
TANT MARKETS**

Date	Chicago	Pittsburgh	Detroit	Cleveland
May 15	-----	\$5.00—\$5.50	\$4.50—\$5.00	\$4.00
May 16	-----	mostly \$5.00	\$4.50	\$4.50
May 17	-----	\$4.25—\$4.50	\$4.25—\$4.50	\$4.50
May 18	\$3.00—\$3.25	\$4.00—\$4.50	\$4.00—\$4.25	\$4.25—\$4.50
	few \$3.50	mostly \$4.25—\$4.50		
May 19	\$3.50—\$3.75	\$3.75—\$4.25	\$4.25	\$4.25—\$4.50
	few \$4.00	mostly \$4.00—\$4.25		
May 20	\$3.75—\$4.00	\$3.50—\$4.00	\$3.75—\$4.00	\$4.15—\$4.50
		few \$4.25	few \$4.25	few \$4.00
May 22	\$3.25—\$3.75	\$4.00—\$4.50	\$4.00—\$4.25	\$4.00—\$4.25
	mostly \$3.50—\$3.75		mostly \$4.00	
May 23	\$3.00—\$3.75	\$4.00	\$3.75—\$4.00	-----
	mostly \$3.25—\$3.75			
May 24	\$3.00—\$3.50	\$3.75—\$4.00	\$3.75—\$4.00	\$3.25—\$3.50
	mostly \$3.25—\$3.50	mostly \$4.00		few \$3.75
May 25	\$3.25—\$3.50	\$4.00—\$4.25	\$3.50—\$3.75	\$3.75—\$4.00
May 26	\$3.00—\$3.50	\$4.00—\$4.25	\$3.50—\$3.75	\$3.75—\$4.00
	mostly \$3.25—\$3.50			
May 27	\$2.75—\$3.50	\$4.00—\$4.25	\$3.00—\$3.50	\$3.75—\$4.00
	few \$3.75			
	mostly \$3.00—\$3.50			
May 29	\$3.00—\$3.50	\$3.75—\$4.00	\$3.00—\$3.50	-----

EXPENSES

The expenses of operating the associations must be paid out of the returns for berries before final settlement is made with the growers, so that the price which they receive is the price received by their association less these expenses. The services of the manager must be paid for and he usually receives a certain amount for each crate handled. In one or two cases the manager is paid a definite salary. He may take care of other local help needed or that may be handled separately. The associations keep in touch with markets and make sales by wire and the expense incurred thereby for telegraph and telephone services also must be paid for by the associations.

The associations reported the following local expenses per crate for the 1922 season:

Number Reporting	Per Crate
1.....	7c
1.....	12c
1.....	12½c
2.....	14c
2.....	15c
1.....	16c
1.....	17c
1.....	20c
1.....	51c

The association reporting local expenses of 51 cents per crate is a new association and the high charge per crate is accounted for by the fact that it had a very small volume of business and that its berries were sold largely in small lots to the retail trade. In addition to the local expenses, a commission is paid in case of shipments which are consigned instead of being sold locally. Two of the associations employed the services of a sales agency in marketing their berries in 1922 and a definite fee was paid to this agency in addition to the local expenses.

DEVELOPMENT OF OUTLETS

What appears to be a case of overproduction may be only an instance of faulty distribution. A highly perishable product such as strawberries must be handled quickly and immediate markets must be found since the berries cannot be held very long. Satisfactory marketing of a product of this kind is dependent upon prompt locating of sufficient outlets. Because of this fact, the various associations devote considerable attention to market outlets. The larger volume of shipments resulting from the rapid increase in the strawberry acreage in Kentucky has increased the importance of this work. The associations usually depend upon making advance contacts with dealers at central points in order that these dealers may be apprised of what the associations will have to offer during the season and be in the market for their berries. Contacts of this kind



Fig. 3.—Map showing the primary destinations reported for shipments of Kentucky berries in 1922. Each dot represents a city.

are very valuable. During the shipping season considerable use is made of telegraphic services in locating markets.

While cars of Kentucky strawberries go to a number of cities in Illinois, Indiana, Ohio, Pennsylvania, Michigan and other states, there no doubt are other cities where additional outlets could be developed. Population statistics give some information of value in locating such outlets, but it must not be assumed that cities having over a certain population can be grouped arbitrarily as available carlot markets for Kentucky berries. The organization of the trade in these markets is one point to be considered. Some of the smaller markets depend upon larger markets for their supplies and their trade may be organized on this basis, and not be prepared to handle berries in carlots direct from producing regions. Since the amount of berries which a market can handle is limited, the competition of berries from other shipping regions also must be considered. A market to which no shipments of Kentucky berries have been made may have received ample supplies from other producing regions.

There are at least 5 cities in Ohio, 4 in Indiana, 11 in Illinois and 6 in Michigan, having a population of over 25,000, which were not included in the destinations reported for Kentucky shipments. Three of these cities have over 50,000 people and eleven of them are over 40,000. Some of these cities no doubt received berries from cities included in the list of destinations and some of the shipments for which the destinations were not ascertained, may have gone to some of these cities. Only five of these twenty-six cities appeared among the markets listed as primary destinations of shipments from Missouri or Arkansas. There are also cities in states other than those mentioned which might be included in this list. If express service were available at more points, the territory to which berries could be shipped would be expanded and new markets no doubt could be built up as a result.

It is of interest to note that over one-half of the 650 cars of Kentucky strawberries for which the primary destinations

in 1922 are available, went to cities that have a population of over 500,000. Less than 3 per cent of these cars went to cities that have a population of less than 10,000. The following table shows the percentage of these shipments going to markets falling within certain groups:

Cities having a population of	Per cent of shipments
500,000 and over.....	53.8
250,000 to 500,000.....	5.7
100,000 to 250,000.....	17.1
50,000 to 100,000.....	9.8
25,000 to 50,000.....	5.7
10,000 to 25,000.....	5.0
Below 10,000.....	2.9
	<hr/> 100.0

Expressed in cumulative percentages, the result is:

2.9% of shipments went to cities below 10,000 population
7.9% of shipments went to cities below 25,000 population
13.6% of shipments went to cities below 50,000 population
23.4% of shipments went to cities below 100,000 population
40.5% of shipments went to cities below 250,000 population
46.2% of shipments went to cities below 500,000 population

These tables show clearly the dependence of the Kentucky strawberry growers upon larger cities as markets for their berries. Larger markets customarily supply not only the population within their city limits, but also smaller cities nearby so that part of the shipments made to the larger markets are distributed from them. It is also probable that in a few instances, some of the smaller markets mentioned among the primary destinations of Kentucky shipments were in reality only diversion points and that the berries moved from them to other markets.

Some suggestions have been made that the associations should conduct advertising campaigns to stimulate the demand for Kentucky berries. Nothing has been done along this line, but it is a step which merits careful consideration. The advertising projects of cooperative marketing associations in other

parts of the country, such as those for citrus fruits, raisins, cranberries, walnuts and other products, are of interest and service in considering plans for extending the markets for strawberries by means of advertising. However, they must be regarded in the light of the conditions and problems existing in the case of strawberries. Among the points which can be suggested are that strawberries are a highly perishable commodity which enjoys a comparatively brief marketing season. Some of the other products which are being widely advertised are distributed thruout the year so that the creation and supplying of demand are continuous. Many of the advertised farm products also are grown in comparatively restricted areas under circumstances where it is not difficult to perfect marketing organizations controlling the distribution of a large proportion of the product. Strawberries come from a number of widely separated districts and best results would seem to require the combined advertising efforts of these various districts, or at least of such districts as enter the same markets. Some advertising of Kentucky berries probably could be carried on with worth while results if the various associations in the State would unite their forces in this field.

Advertising berries and distributing them among the different markets available are not the only factors to be considered in connection with the development of demand. Quality and uniformity always will be important. Good berries encourage consumption, while poor berries discourage demand. Quality depends upon the methods of handling on the farm, picking, grading, packing, hauling, inspection, loading into cars, icing of cars, speed of trains, handling at central markets and by retailers, and on weather conditions.

CENTRAL ORGANIZATION

During the last few years there have been extensive farmers' cooperative marketing developments in various parts of the country. Some of these have been organizations covering a considerable territory directly or thru the formation of federations

of local marketing associations. Some interest has been indicated in Kentucky in the possibilities of forming a central marketing organization made up of the local strawberry marketing associations which have been established. Among the possible services which have been suggested for such a central body has been to concentrate the sale of the berries under one management, the interchange of information regarding production and marketing problems, the development of greater uniformity in grades and the expansion of market outlets. A central organization should be helpful especially in the routing of consigned shipments in such a way as to keep these shipments away from glutted markets as much as possible. The larger organization also should be in a better position to obtain and use market information than are the individual local associations.

The formation of such an association is not entirely free from difficulties. There is need for an appreciation on the part of the various associations and their managers of the importance of giving up some of their freedom of action in return for the greater strength which should come from a well organized and properly directed central body. There must exist a feeling of confidence among the various organizations. A satisfactory division of activities between the locals and the central must be determined upon. Every effort must be made to eliminate jealousies and to prevent the development of any reasons for distrust in the management of the central body. If a central association is formed it should come about as a result of a recognized need. It would be a mistake to organize it unless this need is felt as otherwise it would probably lack the support required for success.

SOME PROBLEMS ENCOUNTERED

Some of the problems encountered in the marketing of Kentucky strawberries have their source on the farms in the growing and handling methods followed; others relate to the handling at the loading point, and still others occur in connection with transportation and the handling of berries in the



Fig. 4.—Map showing the primary destinations reported for shipments of strawberries from Missouri and Arkansas in 1922.

central markets. From the viewpoint of marketing it is important that the best cultural and handling methods be used by the growers because quality aids the sale of the berries. This extends to the picking, packing, grading and delivery. If berries that are too ripe or too green are included, quality is lowered. If the boxes are not well filled, they will present an unsatisfactory appearance when they reach the consumer. If the boxes are too full, the berries are likely to be crushed and present an unattractive appearance on that account.

The care employed by the associations' inspectors plays an important part in the matter of quality and uniformity. If inspection of the berries and the pack is rigid, better quality and uniformity will be obtained. The loading of cars also presents problems. They must be properly loaded and braced so as to withstand the shocks incident to shipping. The cars should be well iced in advance of loading so that they will be well cooled when loaded. One difficulty resulting from the inspection of berries at the car, is that the car at times may be kept open unnecessarily long during loading so that it is not cool when it leaves.

A government inspector stationed at one of the principal markets for Kentucky berries reports that considerable decay was in evidence in the top layer of cars loaded four layers deep. Temperatures in the cars of Kentucky berries inspected at that market in 1922 showed a range of from 39° F. to 54° F., the former being in the bottom layer and the latter in the top layer. Most cars had a temperature of 44° to 46° in the bottom layer and 48° to 52° in the top layer. The three-layer loads showed less decay than the four layer. Inspectors at several of the markets offered the suggestion that cars should be iced from 20 to 24 hours before being loaded. Berries loaded into cars which have not been well cooled or which are allowed to become warmed up too much in loading, are likely to show a higher proportion of decay because good refrigeration does not take place. Some of the association managers stated that cars

were not always well iced and had to be re-iced before being loaded.

The associations sometimes have difficulties in getting the necessary cars when wanted. Express refrigeration is available only at some points at the present time and extending this service to other points would be helpful in opening up additional markets for Kentucky berries.

Answers received from association managers, when asked to express what, in their opinion, is the principal problem confronting their particular association, are of interest. Three managers stated that the greatest need is for better organized methods of marketing; one said means should be devised to avoid price cutting between competing associations; and two said that the greatest difficulty came from dissatisfaction due to misunderstandings on the part of members. One of the newer associations experienced some difficulties when too many people tried to have a hand in managing its affairs, while another had trouble in getting members to deliver berries at the proper time. Keeping up the quality of berries and the interest of growers are problems which also confront this association. Difficulty in securing satisfactory plants was reported by one association and control of plant diseases by another. The manager of one association said he had no problems of any consequence, but had always been able to sell more berries at satisfactory prices than he had available for sale.

SUGGESTIONS AND CONCLUSION

There is an important relation between methods of production and the results obtained in marketing. The wide distribution and the successful marketing of such products as California oranges, Northwestern apples and Eastern Shore of Virginia potatoes, are dependent to a considerable extent upon careful growing, handling and grading methods. Kentucky strawberry growers should bear this fact in mind because the successful sale of their berries depends not only upon having effective distributing machinery, but also upon the care observed in grow-

ing, picking, grading and packing the berries. Educational campaigns probably could be carried on by the marketing associations among their members to emphasize the importance of these matters.

Lack of harmony among the members or misunderstandings between members and the management are apparent in some of the marketing organizations. The personal element which necessarily is present often produces difficulties which are hard to solve. It is highly essential, of course, that there be at all times full understanding between the members and the management. The management should so conduct its affairs that there will be no cause for lack of confidence on the part of the members and the latter should give the management their whole-hearted support. Membership contracts will not of themselves eliminate friction between groups of the members or between members and the management, but they should aid by setting forth clearly the responsibilities of the growers and the organization and by giving greater stability to the enterprise. Because of this fact, it would seem advisable for the associations to give careful consideration to the employment of suitable marketing contracts.

The strawberry marketing associations probably do not feel any pressing need to revise their organization plans and reincorporate under the Bingham Cooperative Marketing Act, which was passed early in 1922. Several of the associations, however, are contemplating such a step and the other associations, no doubt, will find it worth while to give consideration to this matter.

It appears that there is room for some improvements in the transportation service. Some of the associations indicated that the cars were not always adequately iced and had to be re-iced before shipment. It is highly desirable that the cars should be iced sufficiently in advance of loading so that they will be thoroly cooled when loaded. Cars should not be kept

open during loading for a longer period than necessary. Some suggestions have been made that the berries be precooled before shipment. This involves the question of providing additional equipment, which would be used only for a comparatively brief season and the expense would be a limiting factor. The extension of express refrigeration service to more points than those which have this service at present would open up a wider territory for shipment of Kentucky berries. One or two associations which load at more than one point would find it helpful at times if arrangements were made so that they could load a part car at one point and fill the car at another point. Some of the associations also indicated that a later train than now scheduled at their loading points would be serviceable at times.

The various strawberry marketing associations have many problems in common and the proposition of establishing a central association to look after such questions, merits careful consideration on the part of the organizations. Among the propositions to which such a central body could give attention are better cultural and handling methods, the interchange of information, the location and development of outlets, the routing of consignments, the supervising of sales and the handling of transportation questions. Some persons have suggested that a plant to process berries which are too ripe for shipment would be a desirable undertaking. This is a line of endeavor which each association cannot handle for itself. Careful consideration, however, might be given to this question by a central organization to determine whether or not such a plant would be a profitable addition to the marketing machinery. A central organization likely would be found of service in obtaining pickers and in the purchase of plants and supplies needed by the growers.

The question of the condition of Kentucky strawberries when they arrive at their destination was taken up with Food Products Inspectors of the U. S. Department of Agriculture in some of these markets. The following are some of the comments made by these officials.

One inspector writes that "For many years Kentucky strawberries were looked upon as one of the best carrying berries in the country, the stock almost invariably arriving in the market in perfect condition, dry, well colored and well packed. However, during the last two years, most shipments have arrived in a soft condition, showing dull color, probably due to the heavy rains in your state at the time of picking. The merchants also state that during the past two or three years the berries do not seem to have been as well graded as formerly."

Another inspector writes that "Considered as a whole, the quality and condition was good. Missouri, Arkansas and Tennessee berries arrive about the same time with Missouri and Kentucky usually bringing top prices."

"About the only thing I might suggest is to lay special stress on the importance of proper equipment. It is about a four days' haul up here and you can readily appreciate the necessity that only cars offering the best refrigeration should be used. It might be well to call attention to the fact that the car should be iced at least 20 hours before loading in order to insure bringing the temperature down as low as possible."

Another market representative of the department writes that "A good many cars of Kentucky Aromas were sold on this market this season, and the quality and condition compared favorably with that of berries from other sections. Rains caused much of the stock from all sections to come in in a soft, watery condition, but as I remember, Kentucky berries were no worse in this respect than berries from any other section. They usually sold at either the same price as Missouri Aromas, or sometimes one cent a quart or so less. They generally brought 2c-3c a quart less than Gandies and Chesapeake from Maryland and Delaware, and 2c-4c more than Klondikes, being smaller than the former but larger and more attractive in appearance than the latter."

Another representative states that "My impression from what I saw in the markets last spring is that Kentucky berries

suffered rather less from decay than those from several other Southern states, but did show enough decay to mean appreciable loss. Much of the decay in the Southern states last spring was due, I think, to prolonged wet weather and the failure to mulch. Mulching is not a cure-all, but it has been proved to be a valuable aid in improving the crop in amount, quality and ability to carry to market."

